

TWO NEW SPECIES OF THE GENUS *CAMPTOPTEROHELEA* WIRTH
AND HUBERT FROM SOUTHEAST ASIA
(DIPTERA: CERATOPOGONIDAE)

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Abstract.—Two new species are described in the Oriental genus *Camptopterohelea* Wirth and Hubert: **javanensis** from Java and **tokunagai** from Malaysia. Notes and a key are presented to distinguish them from *C. hoogstraali* Wirth and Hubert from the Philippines, the only previously known species. Reasons are discussed for shifting *Camptopterohelea* from the tribe Ceratopogonini to the tribe Stilobezziini.

Heretofore the genus *Camptopterohelea* Wirth and Hubert (1960) has been known only from the unique holotype of *C. hoogstraali* Wirth and Hubert from Mount McKinley, Mindanao, Philippines. The purpose of this paper is to describe two similar but distinct new species of these minute biting midges from two widely separated localities in Southeast Asia. The males and immature stages of these midges are still unknown.

Wirth and Hubert (1960) and Wirth et al. (1974) placed *Camptopterohelea* in the tribe Ceratopogonini, near *Baeohelea* Wirth and Blanton and *Leptohelea* Wirth and Blanton, which also have a reduced number of palpal segments and greatly modified wing venation. A study is now underway, however (Wirth and Grogan, in preparation), in which the tribal assignments of genera in the Ceratopogonini and Stilobezziini are re-evaluated, giving emphasis to some characters that have previously been given little attention. In the forthcoming study the size of the second radial cell, and along with this the length of the costa relative to the length of the wing, the length of the stem of the medial fork, and the presence or absence of macrotrichia on the wing membrane are not given primary importance in the separation of the two tribes. Instead, the presence of sensory pits (sensilla coeloconica) on some of the flagellar segments of the antenna will be given primary importance for recognition of the Ceratopogonini, and secondary emphasis

will be placed on the usual presence of hairy eyes and equal-sized tarsal claws in this tribe. *Camptopterohelea* lacks sensilla coeloconica and has only a single tarsal claw on each leg, and on all these counts must be assigned to the Stilobezziini, where it will key out (Wirth et al., 1974) near *Parastilobezzia* Wirth and Blanton, *Fittkauhelea* Wirth and Blanton, and *Parabezzia* Malloch. It is readily distinguishable from all of these by its short costa and the presence of only one sclerotized spermatheca.

Genus *Camptopterohelea* Wirth and Hubert

Camptopterohelea Wirth and Hubert, 1960:89. Type-species: *Camptopterohelea hoogstraali* Wirth and Hubert (original designation).

Diagnosis.—Only female known. Eyes bare, broadly separated. Antenna 15-segmented, long and slender, last 5 segments not longer than others. Palpus 3-segmented, proximal segment with sensory pit. Proboscis reduced, mandible with or without fine microscopic teeth. Thorax stout, humeral pits present. Legs moderately stout; 4th tarsomeres on front and middle legs slightly cordiform; only a single moderately long tarsal claw on each leg. Wing greatly modified, broad on basal $\frac{1}{2}$ and tapering distally; 2 radial cells present, 1st well developed, 2nd small; media and r-m crossvein absent; anterior portion of wing with a large transverse area with dense coarse microtrichia, other areas of spinelike microtrichia sometimes present; macrotrichia absent. One spermatheca present.

KEY TO SPECIES OF *CAMPTOPTEROHELEA*

1. Wing with a distinct patch of coarse dark spinelike microtrichia on distal portion, separate from the patch extending caudad from area of radial cells; 2nd tarsomere of hind leg with 4 palisade setae in comb 2
 - Wing without patch of dark spinelike microtrichia on distal portion; 2nd tarsomere of hind leg with only 2 palisade setae in comb; (mandibular teeth present; vein M_{3+4} extending to wing margin, vein Cu_1 halfway to margin; patch of coarse spinelike microtrichia behind radial cells with a small cell-like area of small microtrichia) *javanensis*, new species
2. Wing with distal patch of coarse microtrichia large and extending nearly to wing tip; mandibular teeth absent; vein M_{3+4} absent, Cu_1 represented by 2 parallel linear areas of coarse microtrichia extending to wing margin *hoogstraali* Wirth and Hubert
 - Wing with distal patch of coarse microtrichia restricted to a small rounded subapical area; mandibular teeth present; veins M^{3+4} and Cu_1 both extending about halfway to wing margin *tokunagai*, new species

Camptopterohelea hoogstraali Wirth and Hubert

Fig. 1g-h

Camptopterohelea hoogstraali Wirth and Hubert, 1960:90 (♀; Philippines; figs.).

Type.—Holotype, ♀, east slope of Mount McKinley, 3300 ft, Davao Prov., Mindanao, Philippines, 25 September 1946, F. G. Werner, at light (on slide; deposited in Field Museum of Natural History).

Notes.—Through the courtesy of the Field Museum of Natural History the junior author borrowed the type of *C. hoogstraali* in order to make a closer comparison with our two new species. We were able to confirm that in *C. hoogstraali* there is no trace of mandibular teeth, there are four sharp palisade setae on the second tarsomere of the hind leg (Fig. 1g), there is a large area of coarse spinelike microtrichia on the distal portion of the wing (Fig. 1h), and the distal arms of the mediocubital fork are not complete, the anterior arm is apparently entirely absent, and the posterior arm is represented by two parallel linear areas of coarse spinelike microtrichia extending to the wing margin.

Camptopterohelea javanensis Wirth and Wada, NEW SPECIES

Fig. 1a-f

Female.—A minute dark brown midge without distinctive markings. Wing length 0.85 mm (holotype) and 0.71 mm (paratype); breadth 0.43 mm (holotype) and 0.35 mm (paratype).

Head (Fig. 1b): Eyes very broadly separated, by about the diameter of 7 ommatidial facets; bare between facets. Vertex with small hairs in interocular space. Antenna (Fig. 1a) 15-segmented; 1st segment concealed in head capsule, approximately 0.036 by 0.064 mm, higher than broad, with 2-3 small setae; 2nd segment greatly swollen, 0.051 mm long, breadth nearly equal to length; distal segments forming a 13-segmented flagellum 0.50 mm long. Lengths of flagellar segments in holotype in proportion of 12-11-11-11-12-14-14-12-14-14-14-16-25, in paratype 12-11-10-10-10-11-11-11-9-11-11-12-13-20; antennal ratio (XI-XV/III-X) 0.8-0.9; all flagellar segments with a proximal whorl of 4-5 long verticils and a distal pair of short, curved, hyaline sensilla trichodea; in addition segments III-IX each with 3 long, straight, hyaline sensilla trichodea in middle of segment, and segments XI-XV with a few scattered long fine hairs. Palpus (Fig. 1c) short, degenerated from a 5-segmented condition; 1st and 2nd segments absent; distal 3 segments not clearly separated; 3rd segment (apparent 1st) moderately swollen on distal 0.6, 0.036 mm long and 0.023 mm wide, bearing a small, round, shallow, sensory pit; 4th segment short, 0.013 mm long and 0.018 mm wide; 5th segment slender, parallel sided, 0.028 mm long and 0.005 mm wide. Head

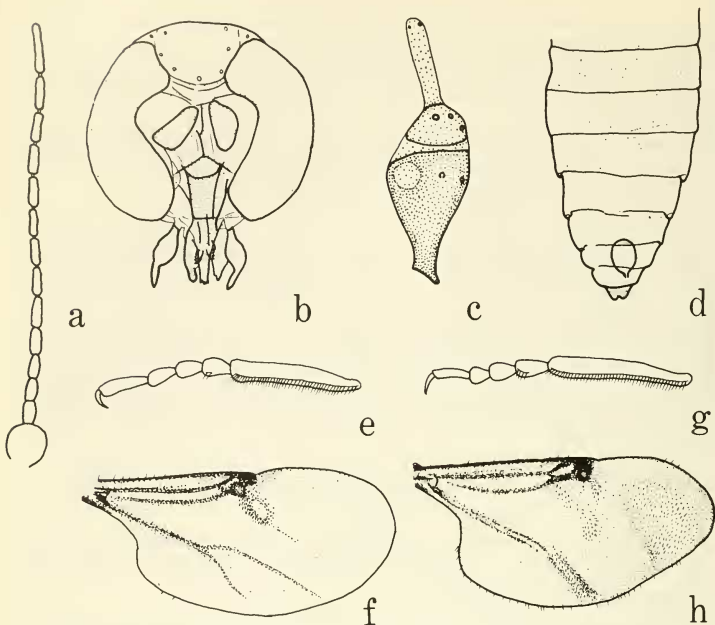


Fig. 1a-f. *Camptopterohelea javanensis*. a, Antenna; b, anterior view of head; c, palpus; d, abdomen; e, hind tarsus; f, wing. Fig. 1g-h. *C. hoogstraali*. g, Hind tarsus; h, wing.

height (from tormae to interocular setae) 0.16 mm in holotype and 0.12 mm in paratype. Mouthparts short; proboscis length (from tip of labrum-epipharynx to tormae) 0.07 mm in holotype and 0.06 mm in paratype. Mandible with 10 teeth, distal ones larger. Labrum-epipharynx with a flap extending beyond 2 blunt, short, terminal teeth, without lateral teeth. Hypopharynx with 4 slender teeth.

Thorax: Scutum dark brown, with a submedian pair of oval hyaline pits toward anterior margin; with short scattered bristly hairs. Scutellum dark brown, with 5-6 bristles. Legs moderately stout, dark brown. Femora with apical pale bands and tibiae with basal pale bands. Front tibia with a lanceolate spur and compact comb of bristly hairs; mid tibia without spur or comb; hind tibia without spur but with a comb of bristly hairs. Hind basitarsus with a row of sharp palisade setae ventrally, and 2nd tarsomere with 2 (rarely 3) sharp palisade setae (Fig. 1e). Claws single, long (0.03-0.04

mm), slightly curved, $\frac{3}{4}$ as long as 5th tarsomere. Proportions of legs as follows (scale: 0.01 mm):

	Femur	Tibia	Tarsomere				
			I	II	III	IV	V
<i>Holotype</i>							
Fore	26	25	11	3	3	3	6
Mid	31	32	14	4	3	3	5
Hind	33	30	15	4	3	3	5
<i>Paratype</i>							
Fore	22	20	10	4	3	3	5
Mid	25	25	12	3	2	2	4
Hind	30	24	13	3	2	2	4

Wing (Fig. 1f) uniformly light brown; venation greatly modified as in figure; vein M_{3+4} complete to wing margin, vein Cu_1 obsolete on distal $\frac{1}{4}$; costa extending to 0.56 of wing length; macrotrichia absent, large spinelike microtrichia present surrounding a small oval bare area in upper middle part of wing, more numerous between this area and end of costa. Halter light brown.

Abdomen (Fig. 1d): Dark brown. A single large oval spermatheca present, measuring 0.115 by 0.087 mm, including a short, slender, sclerotized neck.

Male.—Unknown.

Distribution.—Indonesia.

Types.—Holotype, ♀, Manggis, Sukabumi, West Java, Indonesia, elevation about 500 m, 25 June 1977, T. Suzuki, by light trap at chicken farm (USNM Type no. 73564). Paratype, 1 ♀, same data as holotype (deposited in National Science Museum, Tokyo, Japan). The types are mounted each on a glass slide with phenol-balsam.

Discussion.—*Camptopterohelea javanensis* resembles the type-species of *Camptopterohelea* in all respects except that the mandibles are toothed and vein M_{3+4} is present in the wing. Additional characters for separation of the species of this genus are found in the key.

Camptopterohelea tokunagai Wirth and Wada, NEW SPECIES

Fig. 2

Female.—Wing length 0.69 mm; breadth 0.40 mm. Closely resembling *C. javanensis*, but differing as follows: Antenna (Fig. 2a) with lengths of flagellar segments in proportion of 11-10-11-11-12-12-12-13-14-14-15-15-20, antennal ratio 0.85. Measurements (length vs width in mm) of palpal segments as follows: 3rd, 0.044 by 0.025; 4th, 0.012 by 0.018; 5th, 0.025 by 0.007 (Fig. 2b). Proboscis (Fig. 2e) 0.33 as long as height of head; mandible (Fig. 2d) with 10 fine teeth. Wing (Fig. 2c) with veins M_{3+4} and Cu_1 evanescent about

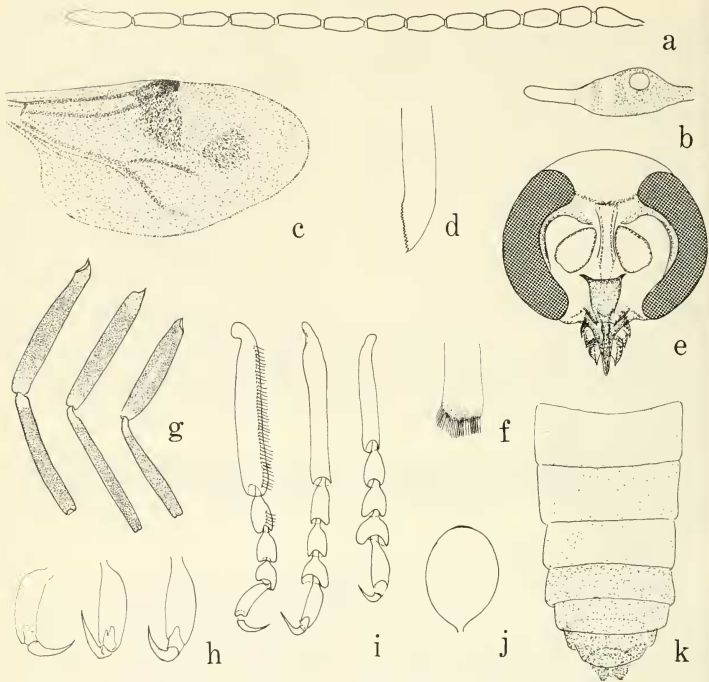


Fig. 2. *Camptopterohelea tokunagai*. a, Antenna; b, palpus; c, wing; d, mandible; e, anterior view of head; f, hind tibial comb; g, femora and tibiae; h, fifth tarsomeres and claws of (left to right) hind, mid, and fore legs; i, tarsi (left to right) of hind, mid, and fore legs; j, spermatheca; k, abdomen, dorsal view.

halfway from base of fork to wing margin; coarse spinelike microtrichia forming 2 large dark brown areas, a larger slightly transverse patch behind radial cells, and a 2nd rounded smaller patch about midway between posterior margin of the former and the wing tip. Halter pale brown. Second tarsomere of hind leg (Fig. 2i) with 4 palisade setae in a comb on distal $\frac{1}{2}$; claws (Fig. 2h) shorter, each about $\frac{1}{2}$ as long as 5th tarsomere. Spermatheca (Fig. 2j) measuring 0.133 by 0.097 mm.

Male.—Unknown.

Distribution.—Malaysia.

Type.—Holotype, ♀, on slide, Kuala Lumpur, Selangor, Malaysia. Ke-

pong Forest Reserve, March–April 1960, R. Traub, light trap (USNM Type no. 73563).

Discussion.—This species is named for Dr. Masaaki Tokunaga of Kyoto, Japan, in recognition of his monumental work on the classification of Asian and Pacific biting midges.

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